



Web Services on Devices

Jack Timmons

Senior Business Development Manager

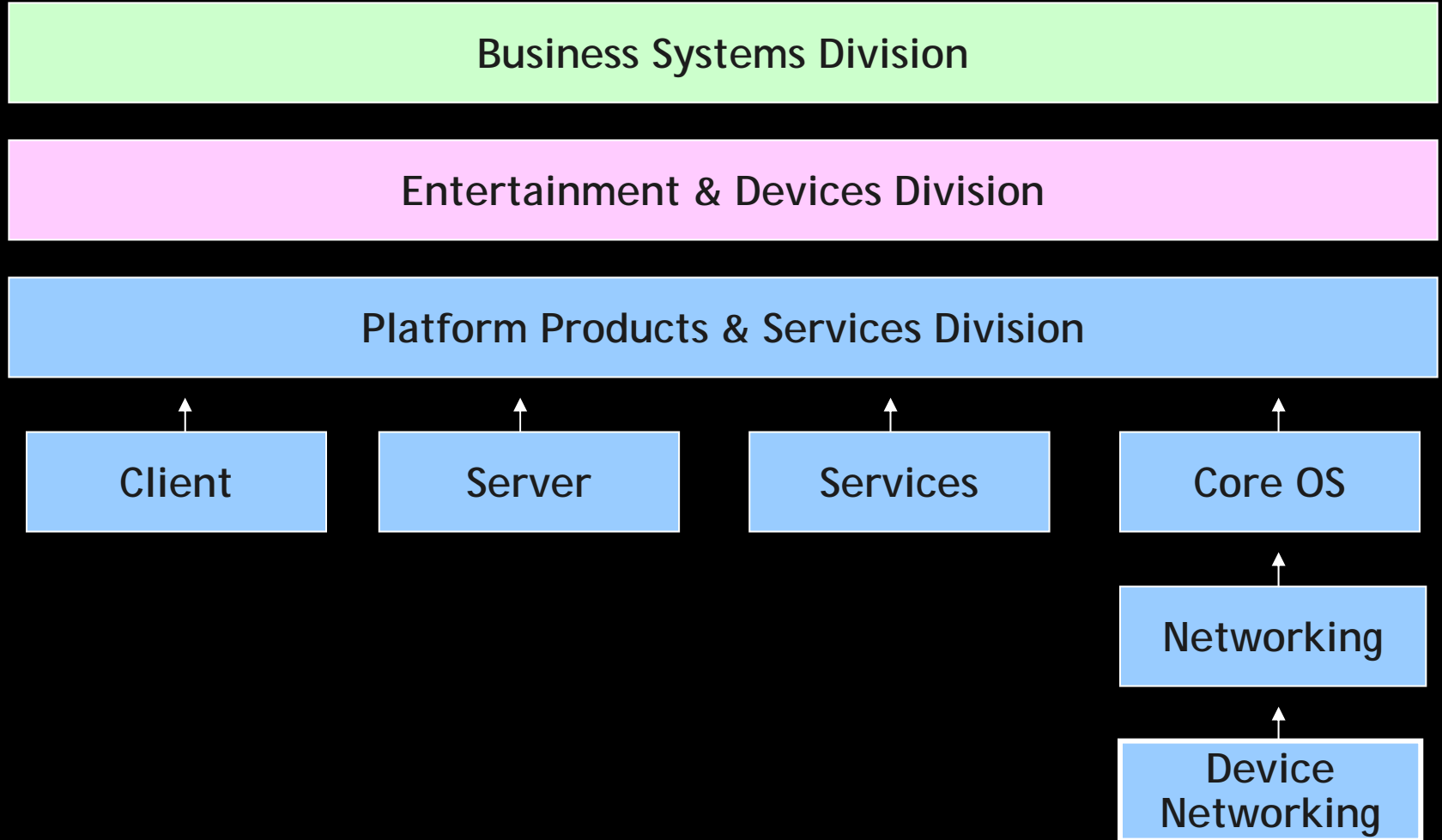
Dave Roth

Senior Program Manager

Windows Device Networking Group

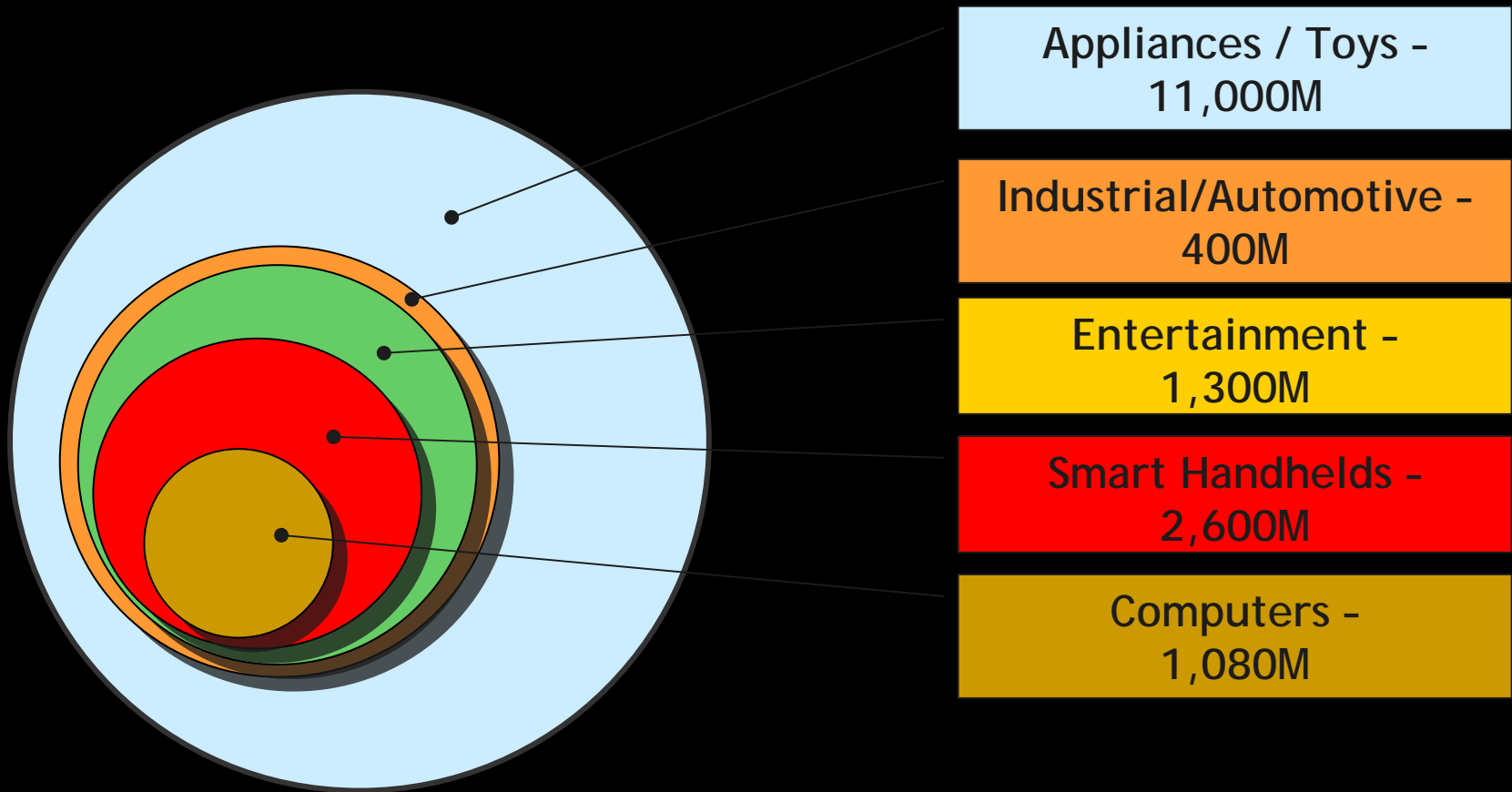
Microsoft Corporation

Organization



Opportunities Abound

17 Billion Traditional Networkable Devices
Installed Worldwide Predicted by 2012



Goals

- Effortless
 - Out of the box easy to use for consumers
 - Lower cost to develop and support
- Secure
 - Enable secure transfer of information
- Rich Experiences
 - Provide a platform for the next wave of innovation

Solution: Web Services on Devices

- Device Profile for Web Services (DPWS)
 - HTTP/1.1
 - WSDL 1.1
 - SOAP 1.2
 - WS-Discovery
 - WS-Addressing
 - WS-Eventing
 - WS-MetadataTransfer
- Cross Internet connectivity for devices, PCs, services
- Lightweight version of enterprise (100k)
- Security: SSL/TLS and WS-Security

Web Services at Microsoft

- Platforms
 - Windows Server - full support for WS-Management
 - Windows Vista - Window Rally, WSDAPI and Indigo
 - BizTalk Server - Exposes business processes and LOB apps as Web services
 - SQL Server - Stored Procedures and T-SQL batches exposed as Web services
 - Host Integration Server - Publish mainframe CICS and IMS apps as Web services
- Developer
 - Visual Studio and the .NET Framework 2.0
 - .NET Compact Framework
 - Web Services Enhancements (WSE) - Extends the .NET Framework with WS-Security, WS-SecureConversation, WS-Trust, WS-Addressing, MTOM
 - Windows Communication Foundation "Indigo" - Managed API
 - InfoCard -Digital identities for Web services-based applications
 - Microsoft Connected Services Framework (CSF) - WS for telecommunication services
 - Web Services on Devices API (WSDAPI)
- Information Worker
 - Office System - VS allows Microsoft Office solutions to consume Web services
 - SharePoint Services/Portal- Portal products can both consume and expose Web services
 - InfoPath- Provides a forms-based front end for Web services
 - Project "Elixir" -Web services to integrate eight CRM systems
- Management
 - Microsoft Operations Manager (MOM)- Supports WS-Management, heterogeneous management of hardware, software applications, and Web services
- CRM, ERP Solutions
- MapPoint, TerraServer, MSN, Windows Live, XBox Live

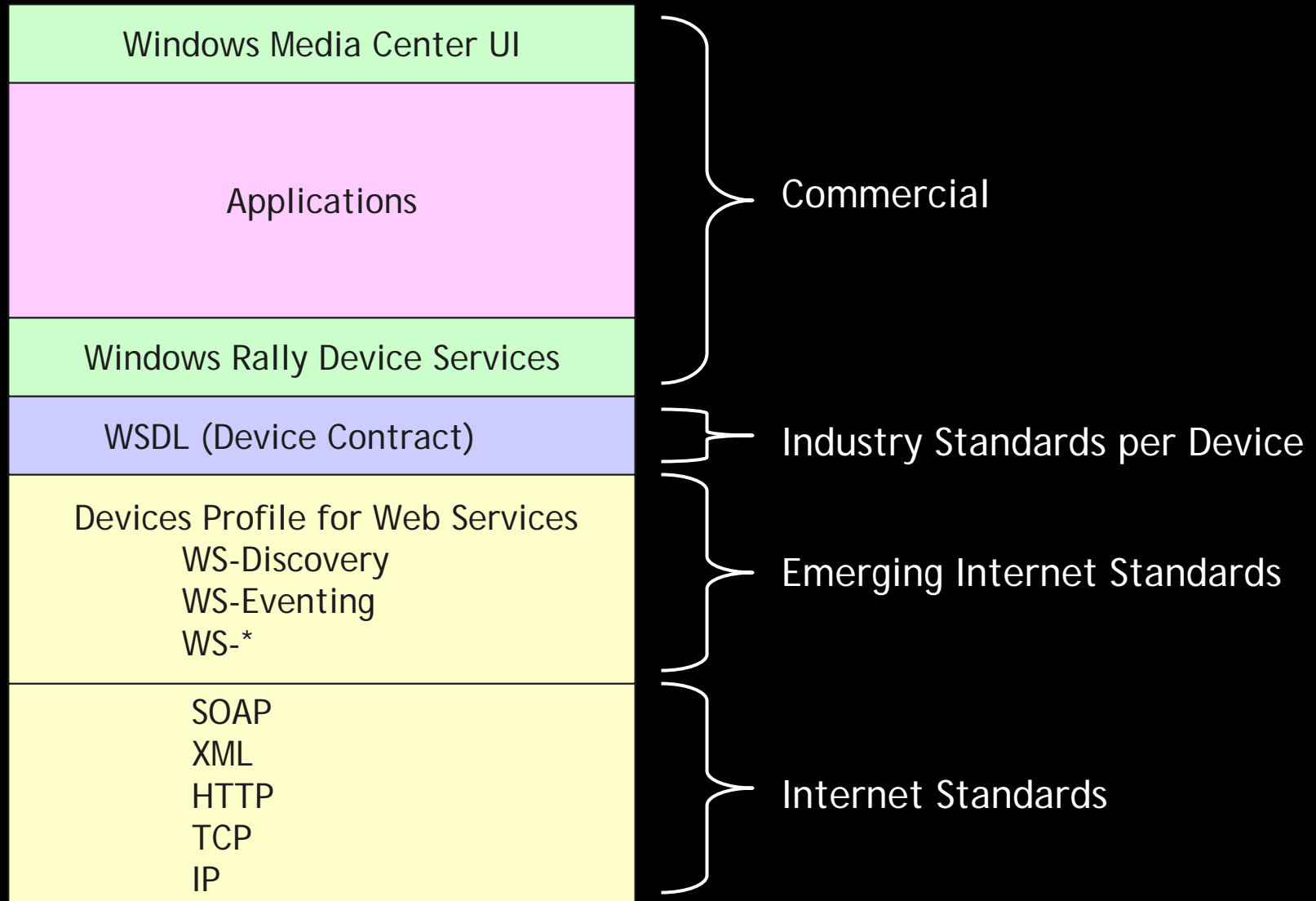
Solution: Value-add Services

Windows Rally Device Connectivity Services

- Easy Network Setup (WCN)
- Windows Plug-n-Play (PnP-X)
- Development tools (WSDAPI)
- Diagnostic tools (LLTD-Map)
- Quality of Service (LLTD-QoS)

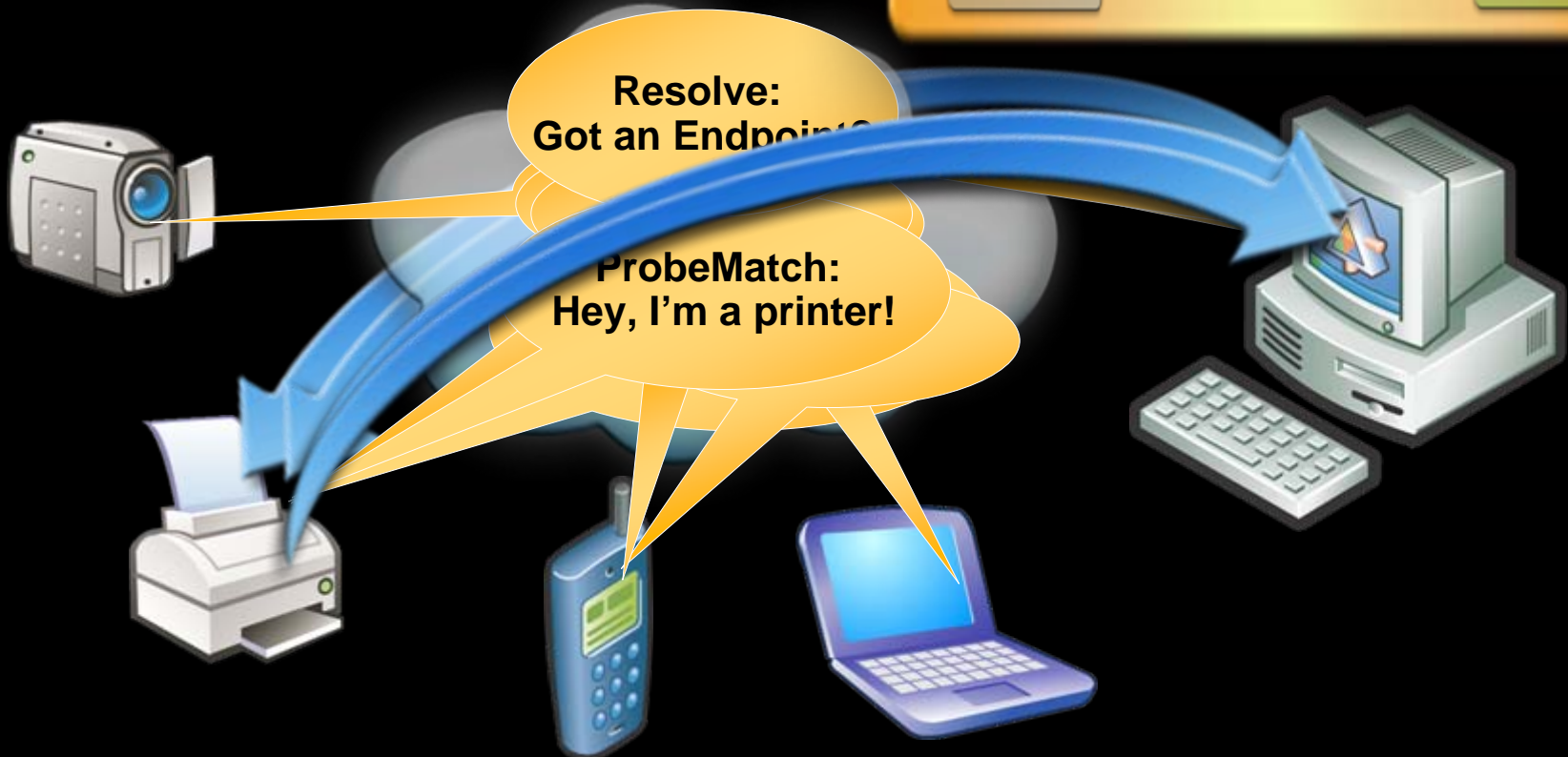
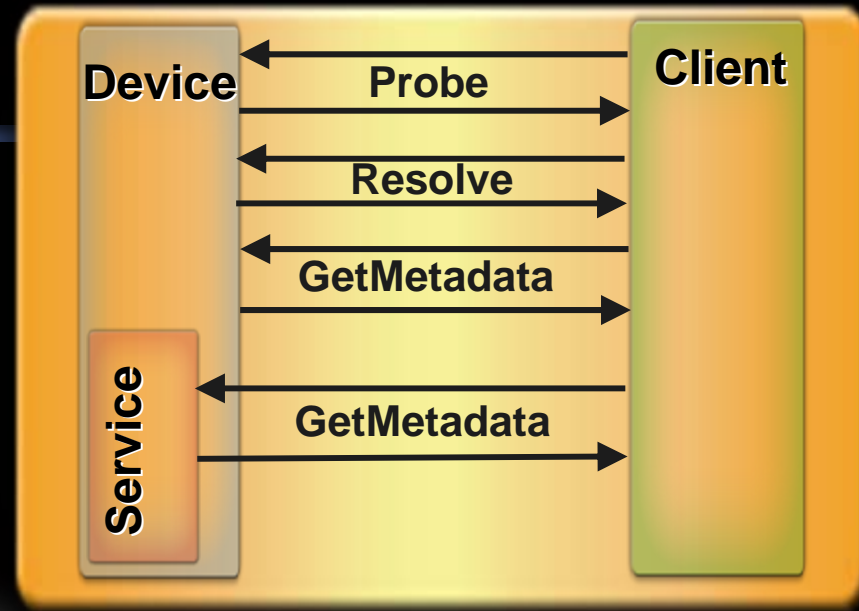
<http://www.microsoft.com/rally>

Standards, Services, Applications

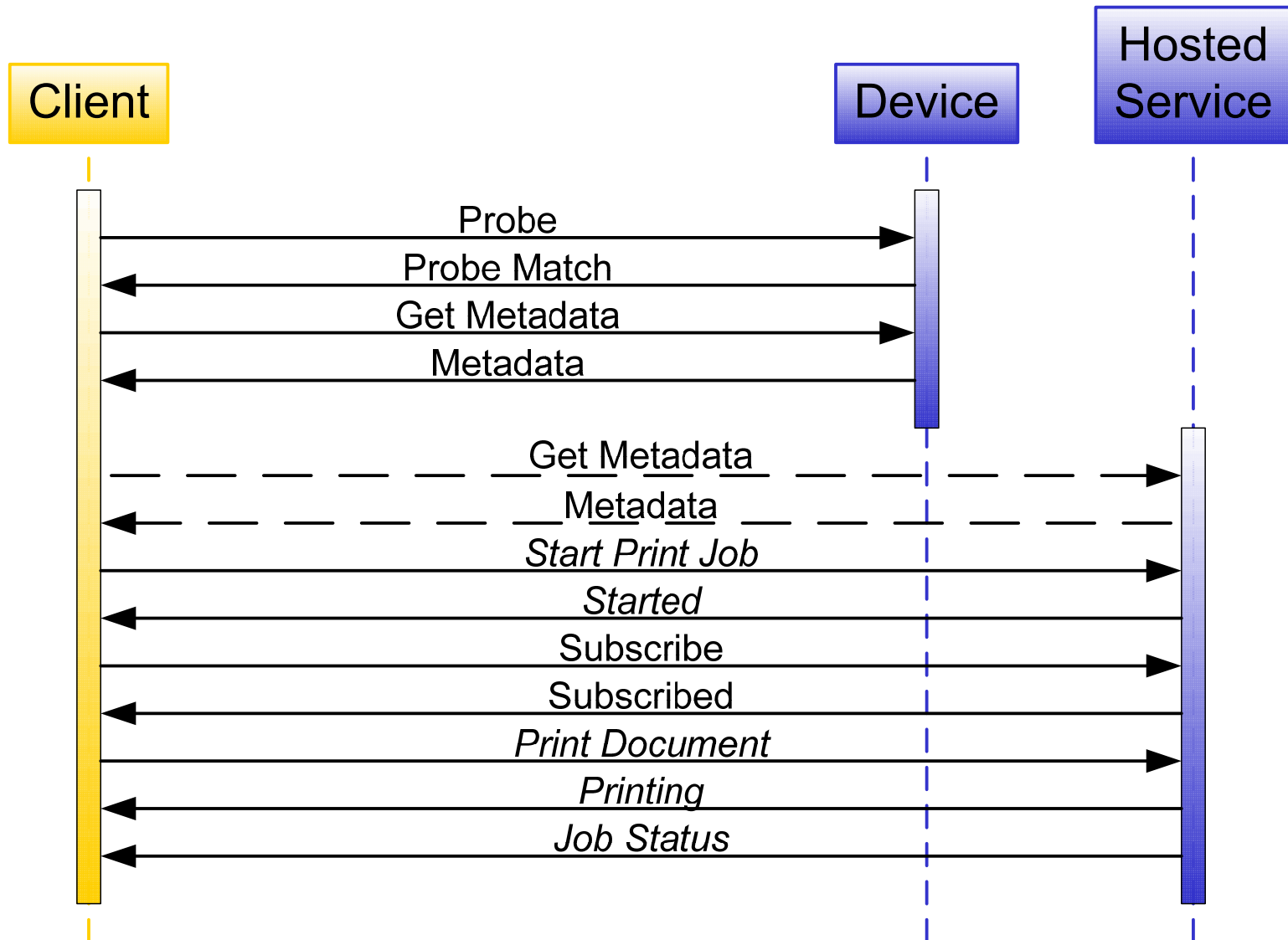


Web Services on Devices

Discovery



Message Flow



Web Services On Devices

Control and eventing

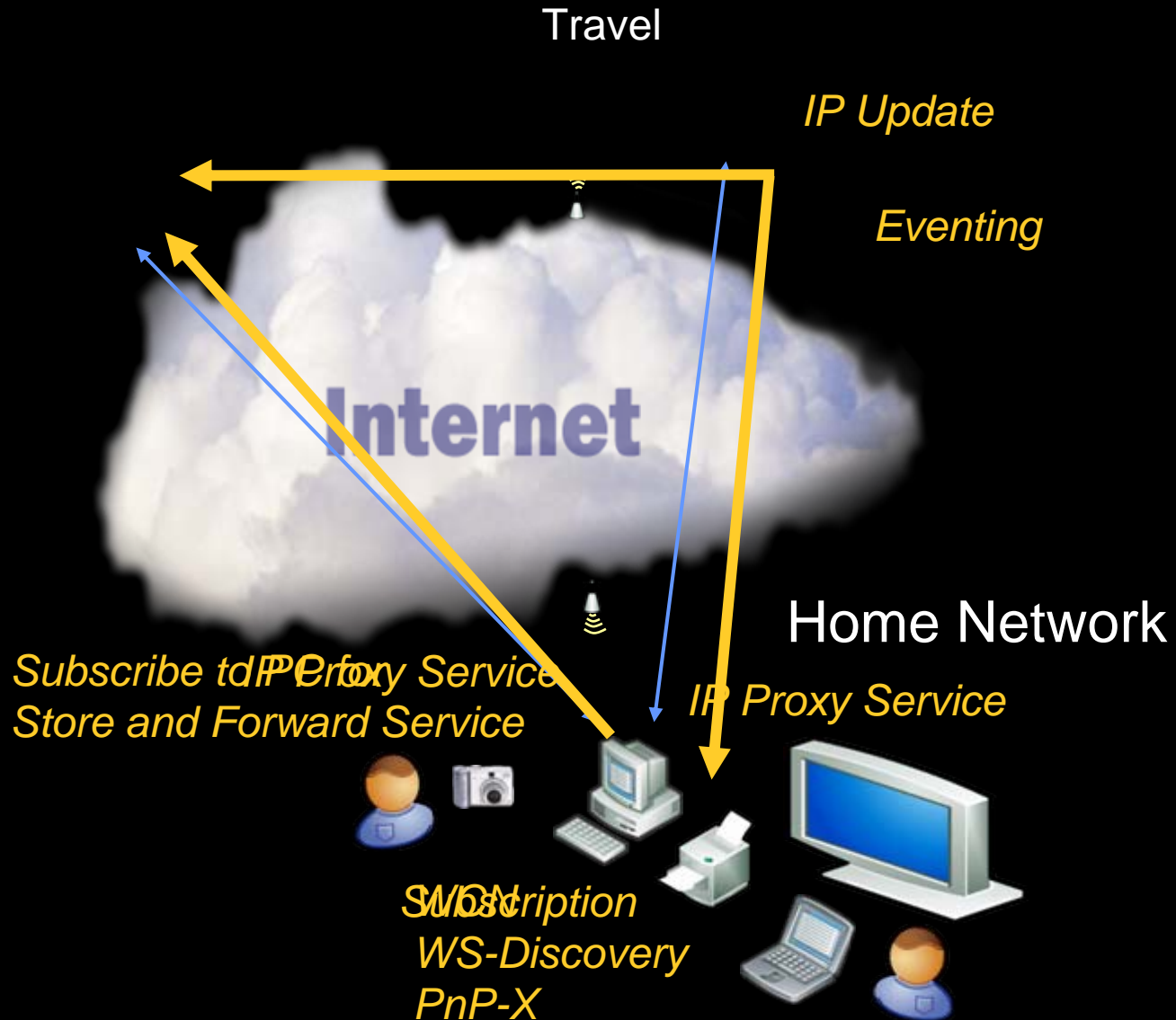
- Contract defined by WSDL and XML schema
 - Ensures common baseline for interop
 - Uses standard WSDL/1.1
- Presents rich eventing model
 - WSDL allows for detailed events
 - Client subscribes to events
 - Device pushes events to clients
- Control and Eventing are securable
- Access control based on certs or in-band credentials

Web Services On Devices

Security

- WS-Security
 - Compact Signature
- Secure Channel
 - Based on TLS
 - Provides encryption
 - Supports host and client authentication
 - Uses HTTPS URN
 - Does not support WS-Discovery

Roaming Device Scenario



Web Services on Devices Deliverables

- WSDAPI shipping in Vista
 - Beta available now
 - Beta toolkit available Fall 2006
 - Planning for XP, Windows Server next year
- WSDAPI shipping in WinCE
 - Projector support shipping Sep 2006
 - General support in December 2006
- WS stack on .NET Micro Framework
 - Shipping in Dec 2006
- Linux stacks currently available from various partners

Product Pipeline

- PCs
 - Printers, scanners
 - Projectors
 - Home control
 - RFID
-
- Healthcare
 - Building control
 - Hospitality
 - Retail
 - Automotive
 - Consumer electronics

Standards

- DPWS is RAND-Z
- Evaluating Internet standards orgs
 - OASIS, W3C, ECMA
- Work with partners to determine best standards org per device class
- Process
 - Create WSDLs in industry with leading partners
 - Drive products to market
 - Check WSDLs into standards org when working

Thank you

jack.timmons@microsoft.com

dave.roth@microsoft.com

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